

REMARKS

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the preceding amendments and the following remarks.

Claims 1-22 are pending in the application. Claims 1-15 have been amended to better define the invention. Claims 16-22 have been added to provide Applicants with the scope of protection to which they are believed entitled. A new Abstract in compliance with commonly accepted US patent practice has been submitted. FIGs. 1 and 2 have been amended to include legends --Prior Art-- per the Examiner's request. No new matter has been introduced through the foregoing amendments.

The objection to the drawings and the *35 U.S.C. 112, second paragraph* rejection of claims 10-15 are believed overcome in view of the above amendments.

The *35 U.S.C. 103(a)* rejection of claims 1-5 and 8-13 as being obvious over U.S. Patent No. 4,943,733 to *Mori* is traversed because the reference fails to disclose, teach or suggest all limitations of the rejected claims.

As to independent claim 1, *Mori* fails to disclose, teach or suggest **multiple** window fragments and an optical monitoring unit having **pattern recognition and auto-focusing capabilities**. Applicants note the Examiner's allegation that *Mori* inherently teaches an optical window. However, even assuming arguendo that the Examiner's was correct, it would not have been obvious to modify *Mori* to include multiple window fragments as presently claimed. The reference is neither modifiable to include an optical monitoring unit having pattern recognition and auto-focusing capabilities. Independent claim 1 is thus patentable over *Mori*.

As to independent claim 10, *Mori* fails to disclose, teach or suggest both steps defined in

this claims, namely, optically scanning the workpiece **using a movable optical unit through an optical window comprising a plurality of relatively small fragments** located in pre-determined locations to enable observation of desired portions of the workpiece, and **defining at least one desired parameter** of said semiconductor workpiece at said desired portions of the workpiece. As discussed above, it would not have been obvious to modify *Mori* to include a step of scanning the workpiece through an optical window comprising multiple window fragments. The optical units 20, 30 of *Mori* are not described nor suggested to be moveable as presently claimed. In addition, *Mori* clearly fails to teach or suggest the claimed step of defining at least one desired parameter of said semiconductor workpiece at said desired portions of the workpiece. Note, in the Office Action the Examiner failed to provide line and column numbers of the *Mori* patent where a defining step might be described or suggested. Independent claim 10 is thus patentable over *Mori*.

Claims 2-9 and 11-15 depend from claims 1 and 10, respectively, and are patentable at least by virtue of their dependency.

As to claims 3-5, the Examiner's allegation that it is well known in the art to configure the shape and optical properties of the *Mori* inherently disclosed window as desired is traversed as being evidentially unsupported. Applicants respectfully request that specific references be cited in support of the Examiner's allegation or the allegation and the 35 U.S.C. 103(a) rejection of claims 3-5 be withdrawn. It should also be noted that the "mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination". *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis added). See MPEP, section 2143.01.

As to claim 12, *Mori* clearly fails to teach or suggest the claimed step of **rotating** said workpiece. Note, in the Office Action the Examiner failed to provide line and column numbers of the *Mori* patent where a rotating step might be described or suggested. Claim 12 is thus patentable over *Mori* on its own merits.

As to claim 13, as discussed above, the *Mori* reference is not modifiable to include **pattern recognition** and **auto-focusing** in the scanning step.

The *35 U.S.C. 103(a)* rejection of claim 6 as being unpatentable over *Mori* in view of *Wang* (U.S. Patent No. 5,812,705) is traversed at least for the reasons advanced with respect to claim 1 from which claim 6 depends. This rejection is also traversed because *Wang* is non-analogous art.

"In order to rely on a reference as a basis for rejection of an applicant's invention [under *35 U.S.C. 103(a)*], the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). *See also In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."); and *Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993). *See MPEP*, section 2141.01(a)

The present invention relates to the semiconductor industry, in general, and to apparatus for and method of monitoring wafers and process control in the *semiconductor processing*, in particular. *Wang* relates to a *printing press*. *See Abstract* and column 1, lines 5-11 of *Wang*. Thus, *Wang* is *not* in the field of the present inventor's endeavor. *Wang* is neither pertinent to the particular problem with which the present inventor was concerned (*see*, e.g., the present specification, the section bridging pages 5-6, points 1-4) because the matter with which *Wang* deals (*see*, e.g., column 2, lines 35-37 of *Wang*) logically would *not* have commended itself to the present inventor's attention in considering his problem. An inventor facing a problem in semiconductor production and processing would *not* have looked for a solution in the art of printing press. The *35 U.S.C. 103(a)* rejection of claim 6 is thus erroneous and should be withdrawn.

The 35 U.S.C. 103(a) rejection of claims 7, 14, 15 as being unpatentable over *Mori* in view of *Drevillon* (U.S. Patent No. 5,757,671) is traversed at least for the reasons advanced with respect to claims 1 and 10 from which claims 7, 14-15 depend.

As to claim 15, the applied references, i.e., *Mori* and *Drevillon*, clearly fail to teach or suggest the claimed step of **measuring spectral characteristics of light response** of the scanned portions of the workpiece. Note, in the Office Action the Examiner failed to provide line and column numbers of the *Mori* and *Drevillon* patents where a spectral characteristic measuring step might be described or suggested.

New independent claim 16 is patentable over the applied references because the references singly or in combination fail to disclose, teach or suggest all limitations of claim 16, i.e., a chamber defining a measuring area and having on a wall thereof an optical window that comprises at least one window fragment an entire area of which is smaller than an entire area of said workpiece and which has a mechanical strength sufficient to sustain a pressure difference between pressures inside and outside said chamber.

Claims 17-21 depend from claim 16, and are considered patentable at least for the reason advanced with respect to claim 16. Claims 17-21 are also patentable on their own merits since these claims recite other features of the invention neither disclosed, taught nor suggested by the applied art.

As to claim 17, the applied references fail to disclose, teach or suggest a chamber which is a **vacuum chamber** in CVD equipment and said workpiece is a wafer.

As to claim 18, the applied references fail to disclose, teach or suggest **multiple** said window fragments, wherein a sum of entire areas of all said window fragments is smaller than the entire area of said workpiece.

As to claims 19 and 20, the applied references fail to disclose, teach or suggest that said support is **rotatable** about an axis.

As to claim 20, the applied references fail to disclose, teach or suggest that said windows fragments are arranged to cover all desired portions of said workpiece where said at least one parameter is to be monitored so that said at least one parameter can be determined at all desired portions of said workpiece in a **single scanning action** without additional relative rotational movement between said optical monitoring unit and said support. See page 22, lines 4-5 of the specification.

As to claim 21, the applied references fail to disclose, teach or suggest that at least one of said window fragments has a **shape of a sector of a circle** having a radius greater than a radius of said workpiece which is a wafer. See Figs. 11-12 of the instant application.

Claim 22 is patentable for the reason advanced with respect to claim 10 from which claim 22 depends. As to claim 22, the applied references also fail to disclose, teach or suggest that, in said scanning step, said movable optical unit scans only predetermined portions of a surface of said workpiece, which is a semiconductor wafer, **without scanning an entirety of said surface** of said semiconductor wafer. See page 22, the last three lines of the specification and FIG. 14.

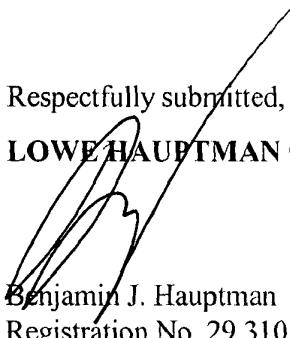
Each of the Examiner's rejections has been traversed/overcome. Accordingly, Applicants respectfully submit that all claims are now in condition for allowance. Early and favorable indication of allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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